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| 09/505,783      | 02/17/2000  | Tadao Inoue          | 122.1393            | 6995             |

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EXAMINER

FAHMY, SHERIF R

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2633

DATE MAILED: 07/14/2003

13

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/505,783

Applicant(s)

INOUE ET AL.

Examiner

Sherif R. Fahmy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on 5/9/2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 and 20-35 is/are pending in the application.
- 4a) Of the above claim(s) 2-7 and 21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 20, and 22-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 20, and 22-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue.

Regarding claim 1, Inoue teaches a light output control circuit (fig. 1A and fig. 1B) comprising:

A photodetector (PD in fig.) which detects the light output of a light-emitting device, to thereby provide a light output protection value;

Adjustment based on a light output detection value.

Though Inoue does not specifically teach a comparator which compares the light output detection value with a reference value, to thereby provide a comparison result, Inoue teaches adjusting the light output based on the light output detection value (abstract). This necessarily requires comparison with a reference value. Otherwise, the light output detection value would provide no information whatsoever for adjusting the light output. This function is incorporated in 1:CPU (see A/D input from the PD). Using a separate comparator and performing this function outside the CPU would have been a design choice and would not have affected the fundamental concept of Inoue's disclosure. Accordingly, at the time the present invention was made, it would have been obvious to one having ordinary skill in the art to use a comparator which compares a light output detection value with a reference value.

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Inoue further teaches:

A light output control device which performs discrete action to control the light output of said light-emitting device in accordance with the result of said comparison output from said comparator (1:CPU); and

A switching circuit (part of CPU) which counts the number of control actions performed by said light output control device, and which instructs said light output control device to perform control in accordance with a power-up mode until the number of control actions after starting the control reaches a predetermined value, and to perform control in accordance with a steady-state mode after the number of control actions has reached said predetermined value (fig. 2, col. 12- line 57 to col. 13- line 60).

3. Regarding claim 20, according to Inoue (see discussion above), in relative terms, control of the light output of said light-emitting device by the light output control device during the power-up mode is coarse, and control of the light output of said light-emitting device by the light output control device during the steady-state mode is fine.

4. regarding claim 22, claim 22 largely corresponds to claim 1, but also recites additional limitations not specifically recited in claim 1. Claim 22 additionally teaches:

a counter performing discrete count operations to increase or decrease a count value in accordance with the comparison result, the light emitting device being controlled in accordance with the count value to thereby control the light output from the light emitting device;

This is inherently taught in the above-cited sections of Inoue, where it is described that 1:CPU performs the said incrementing/decrementing of the value that is inputted to the D/A converters.

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5. Regarding claim 23, according to Inoue, in relative terms, control of the light-emitting device during the power-up mode is coarse, and control of the light-emitting device during the steady-state mode is fine (see discussion above).
6. Regarding claim 24, the light-emitting device is a laser diode (see for example 8:laser in fig. 1A or 1B).
7. Regarding claim 25, the light-emitting device is a laser diode (see for example 8:laser in fig. 1A or 1B).
8. Regarding claim 26, all the features recited in claim 26 are addressed in the discussion of claim 22 above.
9. Regarding claim 27, all the features recited in claim 27 are addressed in the discussion of claim 23 above.
10. Regarding claim 28, all the features recited in claim 28 are addressed in the discussion of claim 24 above.
11. Regarding claim 29, all the features recited in claim 28 are addressed in the discussion of claim 25 above.
12. Regarding claim 30, all the features recited in claim 30 are addressed in the discussion of claim 26 above.
13. Regarding claim 31, claim 31 is a method claim that corresponds to apparatus claim 26. Therefore, the recited means in apparatus claim 26 read on the corresponding steps in method claim 31.
14. Regarding claim 32, all the features recited in claim 32 are addressed in the discussion of claim 28 above.

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15. Regarding claim 33, all the features recited in claim 33 are addressed in the discussion of claim 29 above.

16. Regarding claim 34, claim 34 largely corresponds to claim 28, but also recites additional limitations not recited in claim 28. Claim 34 additionally teaches:

A controller causing the laser diode to be controlled to that,

Until the number of count operations after starting control reaches a predetermined value, the count operations increase or decrease the count value by a first amount, and

After the number of count operations reaches the predetermined value, the count operations increase or decrease the count value by a second amount, the second amount being smaller than the first amount.

These features are taught in Inoue. See for example the cited passages, and especially, figure 2, and col. 11- lines 37 to col. 12- line 7.

17. Regarding claim 35, all the features recited in claim 35 are addressed in the discussion of claim 34 above.

### ***Response to Arguments***

18. Applicant's arguments filed on 5/9/2003 have been fully considered but they are not persuasive.

19. Regarding claim 1, the applicant argues that, "Inoue does not disclose or suggest control based on the number of control actions as recited, for example, in claim 1."

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The examiner respectfully disagrees, and directs the applicant's attention to fig. 1A, fig. 1B, fig. 2, col. 12- line 57 to col. 13- line 60. The operation of light output control, described in these sections here cited, is described in Inoue in fuller detail in col. 9- line 1 to col. 13- line 60.

As described in the sections cited in Inoue, the light intensity is adjusted coarsely (power-up mode) up to a certain level (until the current powering the laser reaches  $I_{th}$ ), beyond which, the light intensity is adjusted finely (steady-state mode). The examiner notes that the current through the laser is a linear mathematical function of the output of D/A converters 2 and 3, as clearly described in Inoue. That is, it is directly proportional to a weighted sum of the outputs of D/A converters 2 and 3. This means, mathematically, that each single combination of outputs of 2 and 3 corresponds to a value of the current applied to the laser (current  $i_L$ ). Each D/A converter output is incremented sequentially in order to adjust the intensity of the light output, first using coarse adjustment, and later using fine adjustment. The digital input to the converter is incremented in a *discrete* manner, and accordingly, the analog output thereof corresponds directly to a count of incremental steps. Accordingly, comparing the current value to  $I_{th}$ , and switching from power-up mode to steady-state mode based on the result, is equivalent to comparing the number of incremental steps to a predetermined value, since  $i_L$  is directly (linearly) proportional to the number of the incremental steps (as explained in Inoue; for example, see equations in the cited passages), and since  $I_{th}$  corresponds to a particular number of incremental steps. Accordingly, the set-up in the Inoue reference correlates one-to-one with the claimed features, and is accordingly a strict equivalent.

20. It is noted that claims 2-7 and 21 have not been considered on the merits since they belong to a non-elected species, and since claim 1 stands rejected.

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21. Newly submitted claim 21 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claim 21 depends from claim 2.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 21 withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

### ***Conclusion***

22. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

23. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sherif R. Fahmy whose telephone number is 703-305-8088. The



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examiner can normally be reached on 8:30AM-6:00PM(Mo-Th) 8:30AM-5:00PM(2nd & 4th Fr).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703-305-4729. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3988 for regular communications and 703-305-3988 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4800.

SRF  
July 8, 2003

  
JASON CHAN  
SUPERVISORY PATENT EXAMINER  
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